Approaching Psychology's Current Crises by Exploring the Vagueness of Psychological Concepts: Recommendations for Advancing the Discipline

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This manuscript was accepted for publication in *American Psychologist*.

Author Note

The authors received no funding for this research. There are no conflicts of interest to disclose.

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Abstract

Psychology is currently facing a multilayered crisis stemming from the fact that the results of many psychological studies cannot be replicated (replication crisis), that psychological research has neglected cross-cultural and cross-temporal variation (universality crisis), and that many psychological theories are ill-developed and underspecified (theory crisis). In the present paper, we use ideas derived from debates in theoretical and philosophical psychology as a basis for responding to all three crises. In short, we claim that psychological concepts are inherently vague in the sense that their meanings and the rules for their application are indeterminate. This does not imply that psychological concepts are ineffable or lack meaning. It implies, however, that hoping to arrive at a finite set of necessary and sufficient criteria that define psychological concepts once and for all is an illusion. From this we deduce four recommendations for responding to psychology's crises. First, we argue that the replication crisis could be approached by paying more attention to the context conditions under which psychological realities and knowledge about these realities are being created. Second, we claim that the universality crisis can be alleviated by putting more effort into exploring variability across times and cultures. Third, we contend that acknowledging the language-dependence of psychological research could be a fruitful way of addressing the theory crisis. Finally, we show that embracing theoretical and methodological pluralism would be an antidote against psychology's crises in general.

Keywords: replication crisis, universality crisis, theory crisis, theoretical and philosophical psychology, methodological pluralism

Public Significance Statement

The vagueness of psychological concepts is often considered a bug that needs to be fixed. In contrast, we argue that it is not a bug: It is a feature. This insight has important consequences for the way academic psychology should best respond to its current crises.

Approaching Psychology's Current Crises by Exploring the Vagueness of Psychological Concepts: Recommendations for Advancing the Discipline

Although the idea that psychology is in crisis accompanies the discipline since its academic beginnings (Maiers, 2022; Sturm & Mülberger, 2012), claims about psychology being in deep crisis have been especially frequent in recent years. However, what exactly constitutes this crisis is far from clear. Some hold that psychology suffers from a *replication crisis* (cf. Pashler & Wagenmakers, 2012; Simmons et al., 2011): The fact that the results of many psychological studies cannot be replicated (Marsman et al., 2017; Open Science Collaboration, 2015), has led researchers to think about ways of ensuring the quality of psychological science (Asendorpf et al., 2013; Munafò et al., 2017). Simultaneously, others argue that psychology is experiencing a – as we term it – *universality crisis*: Over the course of the years, it has been demonstrated that even very basic processes of thinking (Nisbett, 2003), feeling (Osgood et al., 1975), and perception (Segall et al., 1966) show considerable cross-cultural variation. Furthermore, typical psychological samples are severely limited regarding their cultural diversity (Apicella et al., 2020; Henrich et al., 2010) and their sensitivity to cross-temporal variation (Hutmacher, 2022; Hutmacher & Mayrhofer, 2021; 2023; Muthukrishna et al., 2020), which makes the scope of psychological findings unclear. A third crisis diagnosis is brought forward by those who claim that psychology faces a *theory crisis* (Eronen & Bringmann, 2021; Oberauer & Lewandowsky, 2019) in the sense that many psychological theories are ill-developed and underspecified micro-theories (for an early critique, see Meehl, 1978).

In this paper, we will apply ideas derived from debates in theoretical and philosophical psychology to the aforementioned crisis diagnoses in order to connect them on a deeper level. More specifically, we will demonstrate that our key claim – namely that psychological concepts are inherently vague in the sense that their meanings and the rules for

their application are indeterminate – provides a valuable starting point for developing a more comprehensive and integrative perspective on psychology's crises than the perspective that the often highly specialized and separated crisis debates usually offer. As we hope, such a broad perspective will invite future dialogue and debate and can contribute to advancing psychological research in a way that goes beyond the much-discussed particular problem solutions, such as preregistrations and more advanced statistical methods. In order to facilitate such future dialogue and debate, we provide our large-scale integration of ideas derived from theoretical and philosophical psychology in a jargon-free style so that it is accessible to a broad readership.

In the following, we will proceed in three steps. In the first section, we will use "stress" as an illustrative example to lay out our core claim that most psychological concepts are inherently vague. Stress serves as an illustrative example because it is a widely known psychological concept that is relevant for many subdisciplines within psychology and that is tightly connected to the development of modern psychological research. In the second section, we present three lines of reasoning for the claim that psychological concepts are inherently vague. In the third section, we develop new and valuable insights for approaching psychology's replication, universality, and theory crisis that all follow from our key claim.

Stress as an Illustrative Example

Although several ideas proposed at the end of the 19th and the beginning of the 20th century, such as Claude Bernard's (1865) "milieu intérieur", George M. Beard's (1869) "neurasthenia", or Walter B. Cannon's (1929) "homeostasis", are often considered a starting point for modern stress research and although the "founding father of stress", Hans Selye, published his first paper on the "general adaptation syndrome" as early as in 1936, "stress" did not become a popular concept until the second half of the 20th century (for an overview of the history of stress, see Jackson, 2013). Before the Second World War, "no one spoke of

stress; after it, increasingly, everyone did" (Kugelmann, 1992, p. 54). While the stress concept originated in medical and biological contexts, it has soon become tightly connected to (academic) psychology and psychological research (cf. Becker, 2013). Over the last decades, a lot of time and effort has been invested in understanding stress, arguably making it one of the most intensively researched phenomena in contemporary psychology. Against this background, one might intuitively think that "stress" could serve as a prime example of linear scientific progress in psychology in the sense that a concept has been established by psychological experts after the Second World War and has then become more and more precise through years of research. Upon closer consideration, however, this view turns out to be problematic (for more details on the arguments elaborated in the following, see Hutmacher, 2019; 2020; 2021).

First, it seems widely accepted that "stress is difficult to define" (Fink, 2016, p. 5): "There is a great deal of controversy over what the term means" (Martin et al., 2013, p. 682) – and it does not look as if scientists would slowly but surely converge on a commonly accepted conceptualization of stress. For instance, the stress definitions of psychologists interested in endocrinological pathways are often vastly different from the stress definitions of psychologist focusing on stress in organizations or psychologists addressing the different strategies that individuals use to cope with stress (cf. Fink, 2017). Second, the stress concept is applied to a wide range of contexts, connecting research findings from genetics, biology, medicine, and psychology: "Cells respond to stress in a variety of ways" (Fulda, et al., 2010, p. 1) – and so do rats in a laboratory, kids at school, and employees at their workplace. The fact that "stress has a different meaning for different people under different conditions" (Fink, 2017, p. 4) makes the rules for applying the concept indeterminate: That is, it seems unclear whether all uses of the term "stress" really refer to the same phenomenon. Moreover, "stress" is not merely an academic or scientific concept but deeply intertwined with the functioning of

our modern-day world so that the meaning and the application of the stress concept is not determined exclusively by expert definitions based on the current state of research but also shaped by the way individuals use stress in their daily lives. To give a few examples:

> People use a stressful day at work as an excuse not to tell their children their bedtime story or as an explanation why they are always fighting with their partner. They participate in stress management seminars in order to learn relaxation techniques and coping strategies, ask their doctors to put them on sick leave, and talk to their psychotherapists. Stress is also used to state the discomfort with current societal and economic developments. (Hutmacher, 2019, p. 181)

That is, being stressed out has become *a way to be a person*: It has become a way of experiencing ourselves, a way of interacting with our friends and families, our employers and counselors (Hutmacher, 2021; for the general theoretical framework, see Hacking, 2007) so that the "scientific and lay conceptualizations of stress […] mutually reinforce each other" (Donnelly & Long, 2003, p. 398). In sum, this seems to suggest that, despite many decades of intense research, "stress" remains a vague concept in the sense that its meaning and the rules for its application are indeterminate and change over time.

Importantly, there is ample research suggesting that "stress" is not the only case of a notoriously vague concept in psychology. Scholars have identified comparable conceptual vagueness in scientific approaches to cognition (Susswein & Racine, 2009), theory of mind (Hutto, 2009), intentions (Machado & Silva, 2007), forgiveness (Kim & Enright, 2016), memory and learning (Danziger, 2008; Moyal-Sharrock, 2009; Ribes-Iñesta, 1991), key concepts in neuroscience (Bennett & Hacker, 2003; Slaney & Maraun, 2005), and psychiatric diagnoses (Rosenman & Nasti, 2012) such as social anxiety disorder (Hickinbottom-Brawn, 2013). From the perspective of the crisis diagnoses mentioned above, one might argue that the vagueness of psychological concepts results from poor and questionable research

practices (replication crisis), stems from neglecting cross-cultural and cross-cultural variance (universality crisis) or is the consequence of superficial theorizing (theory crisis). Although we do not want to dispute the importance of improving methods and research practices, broadening the scope and generalizability of psychological findings, and creating better theories, our key claim is more radical (for a related line of reasoning, see Newton, 2022; see also Gergen, 1973): As we will argue in the following, the vagueness of psychological concepts – in the sense that their meanings (e.g., "What does 'stress' mean?") and their rules for application (e.g., "Is X an instance of someone being stressed?") are indeterminate – cannot be circumvented. The reasons for this are the existence of looping effects, the inevitability of using ordinary language in psychological research, and the context-dependence of the meaning of psychological concepts.

Why Psychological Concepts Are Inherently Vague

Looping Effects Change the Meaning and the Application of Psychological Concepts

Psychological concepts are directly concerned with ourselves as human beings: What researchers say about concepts such as "stress", "intelligence", or "extraversion" is relevant for us as more or less stressed, more or less intelligent, and more or less extrovert individuals. That is, psychological concepts possess an existential importance for the way we see our position in the world. Consequently, psychological concepts do not merely provide an objective description of the world but can offer us ways of being a person, ways of behaving and interacting with other people; psychological concepts offer us ways of describing and understanding ourselves as well as ways of explaining our thoughts and behavior to others (Hacking, 1999; 2007). That is to say that our psychological vocabulary is partly constitutive of the phenomena it describes (see also Hacker, 1996; 2013 building on Wittgenstein's philosophy of psychology). Importantly, these ways of being a person are not static but may change and evolve over time: When concepts that are used to describe certain individuals are

taken up and transformed by these individuals, this will force researchers to adapt their concepts – a circular process that has been termed *looping effect* (Hacking, 1999; 2007). The existence of such looping effects implies that the "targets" of psychological research "are on the move" (Hacking, 1999, p. 108) – and that they keep moving, no matter how elaborated and well-formulated a theory is. Put differently, we are not passively exposed to psychological concepts but can actively engage with them; when we do engage with them, however, their meaning and the way we use them may change – a loop that tends to repeat itself.

Take the stress concept as a case in point: As described above, "a stressed subject is different from one without such a qualifier: she or he can be treated or behave differently" (Bicknell & Liefooghe, 2006, p. 381). When being stressed out has become a way to be a person, people can use a stressful day at work as an excuse not to tell their children their bedtime story, for instance; when being stressed out is *not* a way to be a person in a particular society, however, they do not have this possibility (see Hutmacher, 2021). Importantly, the way individuals behave when they are stressed is not fixed. That is, the social practices and individual perceptions of what *being stressed* entails may evolve over time – which will in turn shape how researchers approach the phenomenon, how other experts respond to them (e.g., psychotherapists working with individuals who describe themselves as being stressed), and how institutions deal with them (e.g., a health insurance company). This general idea can be illustrated using an example from the early years of stress research (cf. Becker 2013, Chapter 2): When Hans Selye tried to popularize his stress concept, which was originally based on laboratory studies investigating endocrinological pathways, he combined it with biological, medical, and psychological ideas that were widely accepted in his time (e.g., the idea of nervous energy as a limited capital or the importance of adaptation). However, the public did not simply subscribe to Selye's theoretical propositions but actively engaged with

them, discussed them – and ultimately changed them. In turn, this led researchers to think about stress in new ways in the following decades. In Selye's case, "stress had been translated from a story told to the masses by a scientist, into an experience told to scientists by the common person" (Viner, 1999, p. 402) – an experience that the scientists listened to and that they referred to when constructing adapted versions of their stress theories.

In sum, the existence of looping effects provides a first reason as to why psychological concepts are inherently vague: If psychological concepts are transformed by the individuals to whom they are being applied, the meaning and the rules for application of these concepts may shift and change and will therefore remain indeterminate. However, there are at least two objections to be considered to this conclusion. First, and as Hacking (1999; 2007) has emphasized himself, it seems reasonable to assume that not all psychological concepts are equally prone to producing looping effects. Hence, pointing to the existence of looping effects alone is not enough for establishing the vagueness of psychological concepts *in general*. Second, one may be willing to concede that looping effects exist but argue that these looping effects primarily refer to our everyday use of psychological concepts and that psychological science could progress independent of societal influences on the meaning of concepts. As we will outline in the next section, however, this is not possible as psychological research is fundamentally linked to ordinary language.

Psychological Research and its Close Ties to Ordinary Language

Broadly speaking, one can distinguish between *ordinary concepts* that individuals (also) use in their daily lives and *technical concepts* that are defined by a specialized expert community and employed in a particular field of application (Baker & Hacker, 1982; Maraun, 1998; Slaney, 2017). Psychological concepts are usually concepts of the first kind: Concepts such as "intelligence", "emotion", "stress", "memory", or "personality" are not only invoked by scientists and experts but are part of our everyday manner of speaking.

Arguably, this results from the fact that "psychology arose from a need to understand the very same phenomena that are of interest to authors, poets and the person on the street" (Maraun, 1998, p. 454). The obvious problem with ordinary concepts is that they are usually less clearly defined and less precise than technical concepts (for an analysis of ordinary concepts in psychology, see, e.g., Ter Hark, 1990). Hence, one can understand the desire to base psychological research on technical instead of ordinary concepts. There are two potential strategies for doing this.

First, one could take a psychological concept that is used in ordinary language – such as "stress" – and try to turn it into a technical concept (i.e., $\text{stress}_{\text{technical}}$ in opposition to $\text{stress}_{\text{ordinary}}$). Although there is nothing to be said against precisely defining how a certain concept is understood and applied in a given context (e.g., in the context of an empirical investigation), it does not help to circumvent the vagueness of psychological concepts: To begin with, even if researchers agreed on $\text{stress}_{\text{technical}}$, participants may still bring their own understanding of the concept of stress into the investigation. This potentially influences how participants respond to the researchers' questions and instructions, making it unclear whether the collected data really speak to $\text{stress}_{\text{technical}}$ (see Franz, 2023, for a related line of reasoning). Even if one tried to avoid this by refraining from using the term "stress" during the investigation (which can be difficult as researchers need to instruct their participants, which will in many cases make the use of stress-related vocabulary necessary), by providing participants with a sophisticated cover story, or by focusing solely on more objective parameters for which the subjective understanding of the participants does not matter that much (e.g., changes in hormones levels or brain activity), the problem would arise again at other stages of the research process. At the latest when the researchers present their results to the research community or the general public, they will be asked how $\text{stress}_{\text{technical}}$ is related to $\text{stress}_{\text{ordinary}}$. If the proponents of $\text{stress}_{\text{technical}}$ answer that $\text{stress}_{\text{technical}}$ *is not related to*

$\text{stress}_{\text{ordinary}}$, one will want to know why the concept of "stress" was invoked in the first place – and ultimately also how $\text{stress}_{\text{technical}}$ is to be understood if not in terms of $\text{stress}_{\text{ordinary}}$. In order to provide a meaningful explanation of $\text{stress}_{\text{technical}}$, however, these researchers would inevitably have to make use of ordinary language to remain comprehensible. If the proponents of $\text{stress}_{\text{technical}}$ answer that $\text{stress}_{\text{technical}}$ *is related to* $\text{stress}_{\text{ordinary}}$ (but only investigates a specific sub-aspect of it), they would give up the notion that $\text{stress}_{\text{technical}}$ can provide an exhaustive non-vague conceptualization of "stress" and that the use of ordinary language concepts can be avoided. In short, when a technical concept is used in psychological research (such as $\text{stress}_{\text{technical}}$), this will give rise to legitimate questions about the meaning and application of the respective concept that can only be answered in a meaningful way by relying on ordinary concepts. Consequently, "it is a grievous error amongst psychologists to brush aside contemptuously our common-or-garden psychological concepts in the belief that they can simply […] introduce their 'special scientific sense' of salient psychological concepts" (Baker & Hacker, 1982, p. 240; see also Hacker, 2013).

Second, one could try to introduce a new technical concept that has no direct equivalent in ordinary language. To begin with, coming up with such technical concepts is far from trivial, as many – seemingly – technical concepts are more or less directly linked to ordinary concepts from the outset: For instance, "'global self-esteem' derives from 'self-esteem,' 'verbal memory' from 'memory,' 'negative affect' from a network of ordinary concepts related to the expression of emotions such as anger, hostility, guilt, and so on" (Slaney, 2017, p. 220). Nevertheless, there are examples of technical concepts in psychology such as the *g*-factor (Spearman, 1927). However, even with these technical concepts, the same problems will arise, as other researchers and the general public will ask what the *g*-factor is and how it contributes to our understanding of the human mind. When responding to such questions, however, a proponent of the idea of a *g*-factor will have to make use of

psychological concepts embedded in ordinary language such as “intelligence” or “mental abilities” (cf. Franz, 2022b).

Taken together, this implies that a meaningful and informative scientific conversation about psychological phenomena is only possible when ordinary language is used. Precisely because psychological research is concerned with the same kind of phenomena that are of interest to the person on the street and because these phenomena are deeply intertwined with the way we talk about and the way we experience our human mental reality, trying to get rid of ordinary concepts does not seem to be a viable way. This also implies, however, that psychological concepts will always remain vague. This conclusion is further aggravated by the fact elaborated in the next section namely that the meaning and application of psychological concepts is context-dependent.

The Context-Dependence of Psychological Concepts

Psychological concepts are context-dependent in the sense that they can take on new and nuanced meanings within different contexts. Hence, the meaning and the rules for the application of a psychological concept are not given by a set of necessary and sufficient conditions but emerge through notoriously complex linguistic and social practices (e.g., Baker & Hacker, 1982; Bennett & Hacker, 2003; Maraun, 1998; Maraun et al., 2009; Wittgenstein, 1953). Since the meaning of psychological concepts and the rules for their application are dependent on their relations to other terms, to actions, to social norms, to institutions, and to culturally shaped and shared worldviews, technical conceptualizations (e.g., as achieved by an operational definition) will not be sufficient for theorizing about, explaining, and understanding a psychological concept, or for using the concept in a meaningful way in scientific or ordinary discourse.

Once more, take stress as an example: As already stated above, the stress concept is applied to various different contexts, making it an umbrella concept that has the “capacity to

incorporate a wide range of themes" (Pollock, 1988, p. 387) inside and outside psychology. While it may make sense to say that cells are stressed just as it may make sense to say that rats in a laboratory are stressed or kids at school or employees at their workplace, what "being stressed" *means* (e.g., in terms of experienced cognitions and emotions, the social consequences, and appropriate coping mechanisms) and *how the term is applied* (e.g., by a researcher who is depriving rats of food, by parents who try to convince their children that they do not have to be afraid of an upcoming exam, or by a human resources manager who is interested in increasing an employee's performance) differs vastly across these contexts. That is to say that the different meanings and rules for application cannot simply be reduced to some kind of context-independent core meaning, because getting rid of the context would result in losing at least a part of the meaning. Consequently, we should not expect to be able to narrow the different uses of the concept of stress – and of psychological concepts in general – down to a finite set of definitional criteria (cf. Hacker, 2013). Quite the contrary, and following Wittgenstein (1953), psychological concepts should better be seen as *family-resemblance concepts*, "knit together like the fibres of a rope by tenuous, overlapping but discontinuous, strands" (Baker & Hacker, 1982, p. 234). Psychological concepts, such as "stress", "emotion", or "intelligence", do not refer to one single core of meaning; there is no definable center of meaning of stress-talk, emotion-talk, or intelligence-talk. Rather, each of these concepts refers to a wide field of overlapping and interconnected meanings.

Consequences for Psychology's Current Crises

For many psychologists, the vagueness of psychological concepts is a bug that needs to be fixed. In contrast, we have argued that the vagueness of psychological concepts cannot be circumvented: It is not a bug, it is a feature – a feature that follows from the existence of looping effects, the inevitability of using ordinary language, and from the context-dependence of the meaning of psychological concepts. Importantly, the fact that

psychological concepts are inherently vague does not imply that psychological concepts are ineffable or lack meaning (cf. Slaney, 2023). It implies, however, that hoping to arrive at a finite set of necessary and sufficient criteria that define psychological concepts once and for all is an illusion. In the following, we outline the consequences that can be drawn from this conclusion for each of the three crises in psychology mentioned in the introduction (i.e., replication crisis, universality crisis, and theory crisis). We hope that these proposed consequences will inspire further debates and discussions and that they can be part of a larger solution to alleviate psychology's current crises.

Replication Crisis: Making Replication Attempts More Informative

In the complex discussions about psychology's replication crisis, one of the many disputed issues is the question whether psychology can benefit more from direct replications (i.e., repeating one study as exactly as possible) or conceptual replications (i.e., repeating a study with theoretically derived changes in order to test whether the original effect can also be found under different circumstances; e.g., Crandall & Sherman, 2016; Earp & Trafimow, 2015; Hudson, 2021; Hüffmeier et al., 2016; Machery, 2020; Maxwell et al., 2015; Pashler & Harris, 2012; Simmons et al., 2011; Stroebe, 2016). Some scholars have criticized calls for more direct replications by arguing that psychological studies can never be exactly replicated due to inevitable changes in time, location, participants, and so on (cf. Stroebe & Strack, 2014). From this point of view, failed replications can always be the result of cultural changes and, thus, do not necessarily speak against the original finding (comparable arguments can also be found in Baumeister, 2016; Earp & Trafimow, 2015; Stroebe, 2016).

This position is compatible with our own emphasis on the context-dependence and changing nature of psychological concepts. Beyond that, our argumentation leads to a more far-reaching consequence. Psychological phenomena are fundamentally linked to psychological concepts and are, therefore, as dependent on cultural norms, institutions, and

manners of speaking as psychological concepts are. If psychological concepts are inherently vague, then the degree to which there are universally existing psychological effects that can be replicated over and over again is likely to be limited – especially when the societal, cultural, or historical circumstances have changed in the meantime (cf. Gergen, 1973). More specifically, we do not merely claim that psychological phenomena are context-sensitive while nevertheless being based on universal and timeless mechanisms (cf. Crandall & Sherman, 2016; Stroebe & Strack, 2014) but that also the mechanisms underlying these phenomena can change when and because the context changes. From this follows that a replication study can only provide information about the effects observed in the original study if the context relevant to our interpretation of the phenomenon under investigation is similarly instantiated – irrespective of whether the replication attempt is direct or conceptual. The arguments that we provided in this article point to two basic requirements for sufficient similarity between the phenomena investigated in original and replication studies: First, researchers and participants in the original study should share a similar understanding of the study material (e.g., stimuli, instructions, items; see Franz, 2023). Second, participants' understanding of the material should be sufficiently similar in the original study and in the replication attempt. If the first condition is not met, it is unclear whether the data provided by participants are of relevance for the research question asked by the investigators (for studies suggesting that even widely-used high standard Big Five questionnaires are often interpreted very differently by researchers and participants see Arro, 2013; Diriwächter et al., 2005; Rosenbaum & Valsiner, 2011). If the second condition is not met, original study and replication attempt very likely do not provide information about the same phenomenon. For example, if participants in the original and replication study interpret the main questions that serve as an operationalization of the dependent variable in a highly different manner, then the data they provide are likely not related to the same psychological phenomenon.

Arguably, investigating whether researchers and participants in the original and replication study share a sufficiently similar understanding of the research material would greatly benefit from an inclusion of qualitative methods as these methods are designed to capture subjective perceptions and interpretations (cf. Franz, 2023). This seems particularly important when there is reason to suspect that the circumstances of the replication attempt differ significantly from the circumstances of the original study. Importantly, it has been observed that even relatively subtle variations can lead to major differences between studies (see, e.g., the debate about the effect of the presence of a video camera on the facial-feedback effect; Noah et al., 2018; Strack, 2016; Wagenmakers et al., 2016), indicating that the context-dependence of psychological research should not be underestimated. On a more general note, this could help researchers to become more aware of the fact that psychological investigations do not merely *detect* reality as it is but *enact* it in the sense that the modes of thinking and interpreting as well as the instruments and techniques applied in the research process play an important role in producing psychological phenomena (Derksen & Morawski, 2022). In other words, the question is not so much whether a replication attempt is direct or conceptual but whether it pays attention to the conditions under which psychological realities and knowledge about these realities are being created. In line with this, it has recently been suggested that increasing the level of reflexivity during the different stages of the research process (e.g., by reflecting about one's own positionality and agenda for the research at hand) would be an important add-on to the common practices especially in quantitative research (cf. Field & Derksen, 2021; Jamieson et al., 2023; Steltenpohl et al., 2023).

Universality Crisis: The Historical and Cross-Cultural Dimensions of Psychological Research

Understanding the context-dependence of psychological research goes hand in hand with the need to put more emphasis on exploring cross-cultural and cross-temporal variation.

As far as cross-cultural variation is concerned, it has been pointed out that the vast majority of psychological samples is based on data from highly educated individuals living in Western, industrialized, rich, and democratic countries and that these samples are not representative for the world's entire population (i.e., WEIRD samples; Apicella et al., 2020; Henrich et al., 2010). As psychological terminology requires interpretation and as this interpretation always takes place under specific circumstances, taking these circumstances into account instead of treating them as unwelcome noise that needs to get averaged out seems indispensable if psychology wants to do justice to the individuals that it investigates.

This line of reasoning can be extended to cross-temporal variation: Just as psychological research typically deals with WEIRD samples, it is typically also restricted to investigating the thinking, feeling, and behavior of individuals currently living on this planet. Reversely put, cultures and societies of the past are usually not considered when theorizing about psychological phenomena. However, understanding the development of the psychological reality of the past could help to deepen our understanding of the present, which could also enable us to question and transform the current state of things (cf. Gergen, 1973; see also Hutmacher, 2022; Hutmacher & Mayrhofer, 2021; 2023; Muthukrishna et al., 2020). For instance, understanding how being stressed out has become a way to be a person in our present-day societies could be taken as a starting point for thinking about the dysfunctional aspects of modern life and modern identity (cf. Hutmacher, 2019; 2020). Such a historical psychology would not so much focus on "the importance of both lawfulness and deduction, emphasizing instead theory's capacity to holistically explain how a specific event or psychological attitude emerged out of an observed set of historical circumstances" (Sullivan, 2020, p. 84). Psychology is inherently context-dependent and irreducibly interpretative. Hence, taking the assumption that the understanding of psychological concepts differs substantially across the globe and that psychological phenomena do not remain the same over

time as a basic starting point could help researchers to reach a deeper and more nuanced understanding of psychological phenomena. That is, being open to use methods that can do justice to the historical nature and cross-cultural variability of psychological phenomena would be an important step towards improving the quality of psychological research.

Theory Crisis: The Language-Dependence of Psychological Concepts

Many of those researchers who claim that academic psychology is facing a theory crisis advocate mathematical and formal modeling as the way forward for the discipline (e.g., Guest & Martin, 2021; Oberauer & Lewandowsky, 2019; Smaldino, 2020). Sometimes, formalized mathematical theories are contrasted with verbal theories, the latter being regarded as *prototheories*, which may be necessary as an intermediary stage in the scientific process, but which cannot be counted as strong theories in their own right (cf. Borsboom et al., 2021). We believe that this line of reasoning contains both an overestimation of formal theories and mathematical modelling as well as an underestimation of verbal theories. On the one hand, strong formal theories are notoriously hard to formulate, as they require robust psychological phenomena, well-defined constructs, and valid ways of measuring these constructs (Eronen & Bringmann, 2021). The possibilities and limits of measuring constructs in psychology is itself a topic that has remained highly controversial even after decades of intense debate (e.g., Franz, 2022a; 2022b; 2023; Lovasz & Slaney, 2013; Maraun, 1998; Michell, 1997; Slaney & Racine, 2013). Consequently, formalized mathematical models in psychology that require valid ways of measuring constructs are at least as controversial as the measurement of psychological constructs itself.

In addition, formalized mathematical models for psychological phenomena are only valuable insofar as the parameters that they contain are based on knowledge about the phenomena in question and insofar as the relations between these parameters speak to the hypothesized mechanisms driving these phenomena. That is, modelling in psychology does

usually not mean fitting a mathematical function to a set of data without knowing anything about the data or the underlying phenomenon but is based on theoretical considerations that are informed by existing empirical findings (cf. Borsboom et al., 2021). If the choice of parameters and their combination within the theory is not solely determined by mathematical considerations but heavily relies on what we *know* and *think* about a certain phenomenon, however, even formalized mathematical theories cannot escape the use of ordinary language. Proponents of formalized mathematical theories in psychology might now insist that "the primary objective of psychology is not how people *talk* about psychological phenomena, but what the *actual principles* underlying these phenomena are" (Borgstede & Eggert, 2023, p. 158, emphasis in original). If the argumentation about looping effects as well as the language-dependence and context-dependence of psychological concepts we provided above is correct, however, psychological phenomena are intrinsically linked to the way people talk about them in the sense that the way psychological concepts are used and applied shapes the underlying phenomena. Hence, even with the use of formalized mathematical theories, psychological research will be based on inherently vague concepts.

On the other hand, verbal theories are not necessarily weak theories. Quite the contrary, in a fundamentally interpretive discipline such as psychology, verbal theories are irreplaceable for conducting research and for understanding the research that has been conducted. In case our claim is correct that psychological concepts are inherently vague, then verbal specifications are indispensable to guarantee a meaningful theoretical description of psychological phenomena. If the meaning of psychological concepts is context-dependent, then a theory about psychological phenomena is also dependent on such a context. This means that a psychological theory is the more informative, the more effort researchers put into contextualizing it. For instance, if "stress" is used as a buzzword without explaining how it is applied in a certain context, research on stress is at risk of being uninformative and

confusing. Instead, researchers should specify and explicitly reflect the context conditions under which a theory was created as well as the limitations that follow from this for the scope of their theory. Acknowledging that "[p]sychological research relies on context-dependent measurements and informal, verbal definitions of phenomena" and is consequently "deeply rooted in how humans think and communicate about categories" (Brick et al., 2022, p. 494) could help to specify the scope and limits of psychological theories.

Put in other terms, embracing the inherently vague nature of psychological concepts could ultimately lead to more deliberate and thoughtful theory building in psychology. Arguably, this also implies putting more systematic effort into conceptual clarification at the different stages of an investigation, ranging from discussing conceptual ambiguities and different ways of defining a concept to thinking about how the phenomena denoted by these concepts can be investigated (Bringmann et al., 2022). Importantly, and as already briefly mentioned above, the vagueness of psychological concepts should not be confused with arbitrariness or meaninglessness. That is, "recognizing that psychological concepts are characterized by the indeterminate contours of their use is not to take the easy way out and to put a halt to […] psychological investigations" (Ter Hark, 2000, p. 212). Quite the contrary, it has been proposed to view psychological concepts as "tools for knowledge generation" that can continuously be adapted during the research process if needed (Feest, 2010, p. 174). In this context, it has been suggested that research may in some cases even benefit from vague or *loose concepts* (Löwy, 1992) that provide a *trading zone* (Galison, 2010) for connecting previously unconnected areas of research. In other words, the fact that a psychological concept can take on different meanings in different contexts (i.e., is a loose concept) may help to see similarities between these contexts that may have escaped one's attention if the concept had not helped to relate them to one another (i.e., if different concepts had been invoked in the different contexts).

An Antidote Against the Crises in Psychology: Towards Theoretical and Methodological Pluralism

Our final conclusion, which is of relevance to all three aforementioned crises, concerns the importance of strengthening theoretical and methodological pluralism. In response to the perceived vagueness of the subject matter of psychology, researchers seem to seek refuge in the belief that quantitative-experimental methods can serve as a unifying basis for the discipline – a tendency that has been criticized as an adherence to a *methodological imperative* (Danziger, 1985; see also Mayrhofer & Hutmacher, 2020; Lamiell & Slaney, 2021; Toulmin & Leary, 1985). That is, instead of asking what kind of method is best suited for investigating the research question at hand, many psychologists restrict themselves to a pre-defined set of quantitative-experimental methods.

In case we are correct that the vagueness of psychological concepts cannot be circumvented, this way of doing things appears particularly questionable: Given that the human mind can be analyzed from a wide range of perspectives and with various aims (Watanabe, 2010; see also Derksen, 2005), that is, given that there are several ways of making sense of psychological phenomena, there is and will be no single method or theory that can grasp psychological phenomena *as a whole*. Each approach goes hand in hand with a certain perspective on the psychological phenomenon under investigation, meaning that it can address certain questions while it is blind to others. If we restrict ourselves to a predefined set of methods or theories, we also restrict ourselves to a certain perspective on psychological phenomena and the related concepts. Hence, using different methods and considering competing theoretical perspectives can help us to view psychological phenomena from different angles. This does not mean, of course, that we can simply add the results obtained using different methods or theoretical viewpoints until we have a complete overview of the psychological phenomenon under investigation. It is very well possible that the results

obtained using different methods and against the background of different theoretical perspectives are (in part) contradictory.

However, embracing theoretical and methodological pluralism will help us to make the vagueness of psychological concepts and the underlying phenomena explicit – instead of trying to hide it behind a veil of uniformity. In other words, theoretical and methodological pluralism contribute to mapping the complex and multilayered nature of psychological phenomena (for recent discussions of pluralism in psychology, see, e.g., Araujo & Osbeck, 2023; Hutmacher, 2023). In addition, knowing the available options and perspectives will ultimately also give us the opportunity to choose more carefully what kind of perspective on a psychological phenomenon seems most promising and useful in a given situation. That is, theoretical and methodological pluralism can be a starting point for engaging in informed debates about whether (and to what degree) a certain perspective *does justice* (cf. Teo, 2021) to the phenomenon under investigation – at least when this pluralism is based on an equal partnership between researchers from different backgrounds who are willing to learn from one another and to acknowledge the strengths and limitations of the different approaches and positions (Healy, 2012; Yanchar & Slife, 1997). In contrast, sticking to the methodological imperative will prevent psychology from fully explaining why certain effects can be difficult to replicate, from understanding historical changes in psychological phenomena, and from developing theories with clearly defined scopes and limits.

Conclusion

Acknowledging the inherently vague nature of psychological concepts could enable psychologists to approach the crises of their discipline from new perspectives by paying more attention to the context conditions under which psychological realities and knowledge about these realities are being created, putting more effort into cross-cultural and cross-temporal perspectives, acknowledging the language-dependence of psychological research, and

embracing theoretical and methodological pluralism. In putting forward these claims, we want to avoid starting another round in the long-standing conflict between those who prefer a conception of psychological phenomena grounded in the natural sciences and those who prefer a conception of psychological phenomena grounded in the humanities. To the contrary, we hope that understanding the inherently vague nature of psychological concepts could provide an important basis for turning the academic discipline into a vibrant and pluralistic generator of knowledge that is open to including and discussing diverging methods and viewpoints.

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